

IN THE CLAIMS

1 1-17. (Canceled)

1 18. (currently amended) ~~The CAM device of claim 1 further~~ A content addressable memory

2 (CAM) device comprising:

3 a first plurality of CAM cells each including a first static storage circuit to store a first data  
4 value;

5 a first pair of bit lines coupled to the first plurality of CAM cells;

6 a first sense amplifier coupled to the first pair of bit lines;

7 a second pair of bit lines;

8 a first transistor coupled to form a conductive path between a first bit line of the first pair of  
9 bit lines and a first bit line of the second pair of bit lines; and

10 a second transistor coupled to form a conductive path between a second bit line of the first  
11 pair of bit lines and a second bit line of the second pair of bit lines.

1 19. (original) The CAM device of claim 18 further comprising:

2 a second plurality of CAM cells;

3 a third pair of bit lines coupled to the second plurality of CAM cells;

4 a third transistor coupled between a first bit line of the third pair of bit lines and the first bit  
5 line of the second pair of bit lines; and

6 a fourth transistor coupled between a second bit line of the third pair of bit lines and the  
7 second bit line of the second pair of bit lines.

1 20. (original) The CAM device of claim 19 wherein the CAM device further comprises a

2 second sense amplifier coupled to the third pair of bit lines.

1 21. (currently amended) The CAM device of claim 20 wherein the first sense amplifier  
2 comprises a first transistor having first and second terminals coupled to the first and second  
3 bit lines, respectively, of the first pair of bit lines, and wherein the second sense amplifier  
4 comprises a first transistor having first and second terminals coupled to the first and second  
5 bit lines, respectively, of the third pair of bit lines.

1 22. (original) The CAM device of claim 18 further comprising a second sense amplifier  
2 coupled to the second pair of bit lines.

1 23. (currently amended) The CAM device of claim 22 wherein the first sense amplifier  
2 comprises a first transistor having first and second terminals coupled to the first and second  
3 bit lines, respectively, of the first pair of bit lines, and wherein the second sense amplifier  
4 comprises a first transistor having first and second terminals coupled to the first and second  
5 bit lines, respectively, of the second pair of bit lines.

1 24-26. (Canceled)

1 27. (currently amended) A content addressable memory (CAM) device comprising:  
2 a plurality of CAM cell groups each including a respective plurality of CAM cells;  
3 a plurality of pairs of group bit lines, each pair of group bit lines being coupled to the  
4 plurality of a-CAM cells of a respective one of the CAM cell groups;  
5 a plurality of group sense amplifiers coupled respectively to the plurality of pairs of group  
6 bit lines; and  
7 at least one compare line coupled to the plurality of CAM cells in each of the plurality of

8 CAM cell groups.

1 28. (original) The CAM device of claim 27 further comprising a pair of column bit lines  
2 coupled to each pair of group bit lines by a respective pair of group-access transistors.

1 29. (original) The CAM device of claim 28 further comprising a column sense amplifier  
2 coupled to the pair of column bit lines.

1 30. (original) The CAM device of claim 28 wherein each of the plurality of CAM cells of a  
2 CAM cell group comprises:  
3 a storage element;  
4 a compare circuit coupled to the storage element; and  
5 a pair of storage-access transistors coupled between the storage element and the pair of  
6 group bit lines coupled to the plurality of CAM cells of the CAM cell group.

1 31. (original) The CAM device of claim 30 further comprising a plurality of row word lines  
2 coupled to control terminals of the storage-access transistors, and a plurality of group word  
3 lines coupled to control terminals of the group-access transistors.

1 32. (original) The CAM device of claim 31 further comprising:  
2 a first decoder circuit to activate one of the plurality of row word lines indicated by a first  
3 portion of an address value; and  
4 a second decoder circuit to activate one of the plurality of group word lines indicated by a  
5 second portion of the address value.

1 33. (original) The CAM device of claim 32 further comprising a control circuit to output a first

2 decode-enable signal to the first decoder circuit and to output a second decode-enable  
3 signal to the second decoder circuit, the first decoder circuit being configured to activate  
4 the one of the plurality of row word lines in response to the first decode-enable signal, and  
5 the second decoder circuit being configured to activate the one of the group word lines in  
6 response to the second decode-enable signal.

1 34. (original) The CAM device of claim 33 wherein the control circuit is configured to output  
2 the first decode-enable signal and second decode-enable signals at different times.

1 35. (currently amended) A method of operation within a content addressable memory (CAM)  
2 device, the method comprising:  
3 switchably forming a path between a static storage circuit of a CAM cell and a first bit line  
4 to reduce a voltage of the first bit line to a first level; and  
5 sinking current within a first sense amplifier coupled to the first bit line to reduce the  
6 voltage of the first bit line to a second level that is lower than the first level; and  
7 switchably forming a path between the first bit line and a second bit line to reduce a  
8 voltage of the second bit line to a third level.

1 36. (original) The method of claim 35 wherein switchably forming a path between a static  
2 storage circuit and a first bit line comprises activating a word line coupled to a control  
3 terminal of a first transistor, the first transistor being coupled between the first bit line and  
4 the static storage circuit.

1 37. (original) The method of claim 35 wherein switchably forming a path between a static  
2 storage circuit and a first bit line comprises switchably forming a path between a first

3 output node of the static storage element and the first bit line, the method further  
4 comprising switchably forming a path between a second output node of the static storage  
5 element and a second bit line, the second output node having a higher voltage level than the  
6 first output node such that the voltage of the first bit line is reduced to a lower level than  
7 the voltage of the second bit line.

1 38. (original) The method of claim 35 further comprising outputting an enable signal to the  
2 first sense amplifier to enable the first sense amplifier to sink current.

1 39. (original) The method of claim 35 wherein the first sense amplifier comprises a first  
2 transistor having a drain terminal coupled to the first bit line, a source terminal coupled to a  
3 first node, and a gate terminal coupled to a second bit line, the first transistor drawing  
4 current from the first bit line when a voltage on the second bit line is higher than the first  
5 level.

1 40. (original) The method of claim 39 wherein the first sense amplifier further comprises a  
2 second transistor having a drain terminal coupled to the first node, a source terminal  
3 coupled to a reference voltage node and a gate terminal coupled to receive an enable signal,  
4 the second transistor forming a path between the first node and the reference voltage node  
5 in response to the enable signal.

1 41. (canceled)

1 42. (currently amended) The method of claim ~~41~~35 further comprising sinking current within  
2 a second sense amplifier coupled to the second bit line to reduce the voltage of the second  
3 bit line to a fourth level that is lower than the third level.

1 43. (original) A method of operation within a content addressable memory (CAM) device, the  
2 method comprising:  
3 enabling a write driver to draw current from a first bit line to reduce a voltage of the first  
4 bit line from a precharged level to a first reduced level;  
5 enabling a sense amplifier to draw current from the first bit line to reduce the voltage of the  
6 first bit line from the first reduced level to a second reduced level; and  
7 switchably forming a path between the first bit line and a static storage circuit of a CAM  
8 cell to enable the second reduced level of the first bit line to switch the static storage  
9 circuit from a first state to a second state.

1 44. (original) The method of claim 43 wherein enabling the sense amplifier to draw current  
2 from the first bit line comprises enabling the sense amplifier to draw current from the first  
3 bit line after enabling the write driver to draw current from the first bit line.

1 45. (original) The method of claim 43 wherein enabling the write driver to draw current from  
2 the first bit line comprises outputting a write enable signal to the write driver, and wherein  
3 enabling the sense amplifier to draw current from the first bit line comprises outputting a  
4 sense enable signal to the sense amplifier.

1 46. (original) The method of claim 45 wherein switchably forming a path between the first bit  
2 line and a static storage circuit of a CAM cell comprises switchably forming the path  
3 between the first bit line and the static storage circuit after outputting the write enable  
4 signal and the sense enable signal.

1 47. (original) The method of claim 43 wherein enabling the sense amplifier to draw current

2 from the first bit line comprises enabling the sense amplifier to draw current from the first  
3 bit line after enabling the write driver to draw current from the first bit line, the combined  
4 current drawn by the write driver and sense amplifier acting to reduce the first bit line to  
5 the second reduced level.

1 48. (currently amended) A content addressable memory (CAM) device comprising:  
2 a CAM cell having static storage means for static storage of a data value;  
3 a first bit line;  
4 means for switchably forming a path between the static storage means and the first bit line  
5 to reduce a voltage of the first bit line to a first level; and  
6 a first sense amplifier coupled to the first bit line and having means for drawing current  
7 from the first bit line to reduce the voltage of the first bit line to a second level that is  
8 lower than the first level;  
9 a second bit line; and  
10 means for switchably forming a path between the first bit line and a second bit line to  
11 reduce a voltage of the second bit line to a third level.

1 49. (canceled)

1 50. (currently amended) The CAM device of claim 49-48 further comprising a second sense  
2 amplifier having means for drawing current from the second bit line to reduce the voltage  
3 of the second bit line to a fourth level that is lower than the third level.

1 51. (original) A content addressable memory (CAM) device comprising:  
2 a CAM cell having static storage means for static storage of a data value;

3 a first bit line;  
4 write driver means for drawing current from the first bit line during a first interval to  
5 reduce a voltage of the first bit line to a first reduced level;  
6 sense amplifier means for drawing current from the first bit line during a second interval to  
7 reduce the voltage of the first bit line to a second reduced level, the second interval  
8 beginning after the first interval and being at least partially encompassed by the first  
9 interval; and  
10 means for forming a path between the first bit line and the static storage means.

1 52. (new) A content addressable memory (CAM) device comprising:  
2 a column of CAM cells including a first group of CAM cells and a second group of CAM  
3 cells;  
4 a first pair of bit lines coupled to the first group of CAM cells;  
5 a second pair of bit lines coupled to the second group of CAM cells; and  
6 a third pair of bit lines coupled to the first pair of bit lines via a first pair of access  
7 transistors and to the second pair of bit lines via a second pair of access transistors.

1 53. (new) The CAM device of claim 52 further comprising a pair of compare lines coupled to  
2 each CAM cell included in the column of CAM cells.

1 54. (new) The CAM device of claim 52 further comprising a first sense amplifier coupled to  
2 the first pair of bit lines, a second sense amplifier coupled to the second pair of bit lines and  
3 a third pair sense amplifier coupled to the third pair of bit lines.

1 55. (new) The CAM device of claim 52 wherein the first pair of access transistors comprise



2 control terminals coupled to a first group word line and the second pair of access transistors  
3 comprise control terminals coupled to a second group word line.

1 56. (new) The CAM device of claim 55 further comprising an address decoding circuit to  
2 activate the first group word line in response to an address that corresponds to a CAM cell  
3 included in the first group of CAM cells, and to activate the second group word line in  
4 response to an address that corresponds to a CAM cell included in the second group of  
5 CAM cells.

1 57. (new) The CAM device of claim 56 further comprising a first plurality of row word lines  
2 coupled respectively to CAM cells included in the first group of CAM cells and a second  
3 plurality of row word lines coupled respectively to CAM cells included in the second group  
4 of CAM cells, and wherein the address decoding circuit includes circuitry to activate one  
5 word line of the first plurality of row word lines in response to the address that corresponds  
6 to a CAM cell included in the first group of CAM cells and to activate one word line of the  
7 second plurality of row word lines in response to the address that corresponds to a CAM  
8 cell included in the second group of CAM cells.